GOVERNMENT OF WEST BENGAL
OFFICE OF THE ECONOMIC BOTANIST VII
SUGARCANE RESEARCH STATION
BETHUADAHARI, NADIA

To
The Director of Research & P.I (Crop Production)
AICRP on sugarcane
Rajendra Agriculture University
Pusa-848125, Samasthipur,
Bihar

Sub: Annual Report of AICRP (S) Crop Production,2012-13

Sir,

Please find enclosed herewith the Annual Report of Agronomy trial titled Management of Binding Weeds in Sugarcane of 2012-13.

Thanking you.

Yours faith fully,

Dr Keya Banerjee
Assistant Agronomist
Sugarcane Research Station
Bethuadahari, Nadia

All India Coordinated Research Project on Sugarcane

Experiment no.	**2.1.**
Title	**Management of binding weeds in sugarcane**
Objective	To evolve an appropriate weed management strategy for sugarcane in this state
Location	Sugarcane Research Station, Bethuadahari, Nadia
Workers	Dr. K. Banerjee (A. A.), S. K. Biswas (Sr. F. A.)
Design	RBD with three replications
Treatments (10)	T_1 – Control (weedy check) T_2 – Hoeing at 30, 60 and 90 DAP T_3 – Atrazine @ 2 kg a.i./ha (PE) followed by 2,4-D (1 kg a.i./ha) at 60 DAP T_4 – Atrazine @ 2 kg a.i./ha after 1st irrigation and hoeing followed by 2,4-D @ 1 kg a.i./ha at 75 DAP T_5 – Metribuzine @ 1.25 kg a.i./ha (PE) followed by 2,4-D @ 1.0 kg a.i./ha at 75 DAP T_6 – Atrazine 2 kg a.i./ha (PE) + Almix* 20 g/ha at 75 DAP T_7 – Metribuzine @ 1.25 kg a.i./ha (PE) + Almix 20 g/ha at 75 DAP T_8 – Atrazine 2 kg a.i./ha (PE) + Ethoxysulfuron 50 g a.i./ha at 75 DAP T_9 – Atrazine 2 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP T_{10} – Metribuzine @ 1.25 kg a.i./ha (PE) + Dicamba 350 g a.i./ha at 75 DAP
Variety	BO 91
Plot size	Gross - 6 m × 6 rows × 0.90 m Net - 5 m × 4 rows × 0.90 m
Date of planting	17th February 2012

Result and Discussion:

Weed Flora & Weed drymatter:

A mixed weed flora was recorded in the year 2012. The major weed flora at 90DAP were:

Cyperus rotundus, Cynodon dactylon, Panicum sp., Trianthema monogyna, Solanum nigrum, Echinochloa colona, Digitaria sanguinalis, Amaranthus viridis, Phylanthus niruri, Dactyloctanium aegyptium, Convolvulus arvensis, Vicia faba

As far as the effect of different management practices are concerned highest weed population and dry matter was recorded in weedy check plots. Significant reduction in weed density and weed dry matter were observed due to different treatments compared to that of weedy check (Table-2). The application of herbicide metribuzine @ 1.25kg ai/ha (PE) + Almix 20g/ha at 75 DAP exhibited the maximum control of weeds and effectively lowered the weed density and weed dry matter accumulation at 120 DAP compared to weedy check. However this result is statistically at par with the treatment comprising three hoeing at 30, 60 and 90 DAP.

The maximum weed control efficiency was found with the treatment involving the application of metribuzine @ 1.25/ha (PE) + Almix 20g/ha at 75DAP (Table-2). This might be due to the fact that lowest weed density/ sqm and lowest weed dry wt/sqm were obtained with this treatment.

Effect on Crop:

Lowest number of tillers, millable canes and cane yield were recorded under weedy check plot. Highest cane yield (82.39t/ha) was recorded with the treatment receiving metribuzine @ 1.25kg ai/ha (PE) + Almix 20g/ha at 75DAP (Table-3). This treatment was found to be at par with the treatment receiving three hoeing at 30, 60 and 90 DAP. The highest cane yield with these two treatments is primarily due to higher number of millable cane and cane weight with this treatment.

The highest brix (20.33%), sucrose (17.16%), CCS (11.59%) and CCS (9.51t/ha) were obtained with the treatment receiving the application of metribuzine @ 1.25 kg ai/ha (PE) + Almix 20g/ha at 75 DAP closely followed by the treatment receiving three hoeing at 30, 60 and 90 DAP. The lowest brix (17.10%), sucrose (14.55%), CCS (9.98%) and CCS (5.38t/ha) were recorded in weedy check treatment (Table-1 & Table-3).

Economics:

Data presented in Table-3 reveals that the lowest net returns (Rs 55,984/ha) and B:C ratio (2.20) was observed in weedy check because of lower yields. The highest net return of Rs 1,05,390/ha and B:C ratio of 2.63 were recoded under the application of metribuzine @1.25kg ai/ha (PE) + Almix @20g/ha at 75 DAP closely followed by three hoeing (Net return of Rs 99,519/ha and B:C ratio of 2.49).

Table 1: Quantitative and qualitative characters of sugarcane as affected by different treatments during the year 2012

Treatments	Ger. (%)	No of Cane at harvest ('000/ ha)	NMC('000/ ha)	SCW(Kg)	Brix (%)	Sucrose (%)	Purity (%)
T_1- Control(weedy check)	40.52	84.19	72.51	0.71	17.10	14.55	85.09
T2-Hoeing at 30,60 and 90 DAP	39.61	96.12	87.49	0.86	20.20	16.89	83.60
T_3- Atrazine @ 2kg ai/ha(PE) followed by 2,4-D(1kg ai /ha) at 60 DAP	43.77	92.03	80.61	0.78	17.64	14.88	84.38
T_4- Atrazine @2kg ai/ha after Ist irrigation and hoeing followed by 2,4-D(1kg ai /ha) at 75 DAP	37.41	94.83	84.59	0.83	18.36	16.11	83.10
T_5- Metribuzine @ 1.25kg ai/ha (PE) followed by 2,4-D(1kg ai /ha) at 75 DAP	43.37	94.41	82.90	0.85	19.58	16.85	86.07
T_6- Atrazine @ 2.0kg ai/ha(PE) + Almix 20g/ha at 75 DAP	35.66	90.68	83.02	0.81	17.89	15.02	83.99
T_7- Metribuzine@ 1.25kg ai/ha(PE) + Almix 20g/ha at 75 DAP	45.28	97.47	88.16	0.88	20.33	17.16	84.38
T_8- Atrazine @ 2.0kg ai/ha(PE) + Ethoxysulphuron 50g ai/ha at 75 DAP	42.00	85.87	74.30	0.74	17.28	14.55	84.37
T_9- Atrazine @ 2.0kg ai/ha(PE) + Dicamba 350g ai/ha at 75 DAP	41.30	93.00	83.01	0.81	18.17	15.11	83.18
T_{10}- Metribuzine @ 1.25kg ai/ha (PE) + Dicamba 350g ai/ha at 75DAP	38.61	93.68	84.40	0.84	18.86	15.91	84.37
SEm (±)	NS	1.25	0.86	NS	0.19	0.11	NS
CD at 5%	NS	3.75	2.59	NS	0.57	0.33	NS
CV	11.45	9.77	10.25	12.19	13.22	8.12	12.35

Table 2: Weed density, dry weight of weeds and weed control efficiency of different weed control treatments in sugarcane crop during the year 2012

Treatments	Weed density /sqm (at 120 DAP)	Weed drywt (g/sqm) at 120 DAP	Weed control efficiency
T_1- Control(weedy check)	410	261.1	**----**
T2-Hoeing at 30,60 and 90 DAP	101	78.8	69.87
T_3- Atrazine @ 2kg ai/ha(PE) followed by 2,4-D(1kg ai /ha) at 60 DAP	215	164.78	36.55
T_4- Atrazine @2kg ai/ha after Ist irrigation and hoeing followed by 2,4-D(1kg ai /ha) at 75 DAP	127.5	102.47	60.76
T_5- Metribuzine @ 1.25kg ai/ha (PE) followed by 2,4-D(1kg ai /ha) at 75 DAP	113	94.02	64.00
T_6- Atrazine @ 2.0kg ai/ha(PE) + Almix 20g/ha at 75 DAP	141	120.6	53.69
T_7- Metribuzine@ 1.25kg ai/ha(PE) + Almix 20g/ha at 75 DAP	93.5	77.74	70.15
T_8- Atrazine @ 2.0kg ai/ha(PE) + Ethoxysulphuron 50g ai/ha at 75 DAP	254	168.6	35.43
T_9- Atrazine @ 2.0kg ai/ha(PE) + Dicamba 350g ai/ha at 75 DAP	157.5	133.84	48.58
T_{10}- Metribuzine @ 1.25kg ai/ha (PE) + Dicamba 350g ai/ha at 75DAP	136	109.92	57.92
SEm (±)	7.92	5.53	------
CD at 5%	23.75	16.58	-----
CV	11.22	10.49	-------

Table 3: Production and Economics of different weed control treatments

Treatments	CCS (%)	Yield (t/ha)	CCS (t/ha)	Net Income (Rs/ha)	B:C ratio
T_1- Control(weedy check)	9.88	54.51	5.38	55,984	2.20
T_2-Hoeing at 30,60 and 90 DAP	11.36	79.45	8.99	99,519	2.99
T_3- Atrazine @ 2kg ai/ha(PE) followed by 2,4-D(1kg ai /ha) at 60 DAP	10.06	67.08	6.73	77,850	2.61
T_4- Atrazine @2kg ai/ha after Ist irrigation and hoeing followed by 2,4-D(1kg ai /ha) at 75 DAP	10.89	74.59	8.10	76,960	2.9
T_5- Metribuzine @ 1.25kg ai/ha (PE) followed by 2,4-D(1kg ai /ha) at 75 DAP	11.51	75.71	8.70	92,950	2.38
T_6- Atrazine @ 2.0kg ai/ha(PE) + Almix 20g/ha at 75 DAP	10.13	70.66	7.14	84,445	2.45
T_7- Metribuzine@ 1.25kg ai/ha(PE) + Almix 20g/ha at 75 DAP	11.59	82.39	9.51	1,05,394	2.63
T_8- Atrazine @ 2.0kg ai/ha(PE) + Ethoxysulphuron 50g ai/ha at 75 DAP	9.82	59.45	5.83	61,935	1.74
T_9- Atrazine @ 2.0kg ai/ha(PE) + Dicamba 350g ai/ha at 75 DAP	10.14	70.22	7.09	81,225	2.10
T_{10}- Metribuzine @ 1.25kg ai/ha (PE) + Dicamba 350g ai/ha at 75DAP	10.75	74.05	7.94	87,309	2.18
SEm (±)	0.18	0.82	0.09	----	---
CD at 5%	0.53	2.46	0.27	----	---
CV	9.11	10.24	16.19	------	-----